(12) UK Patent Application (19) GB (11) 2 383 231 (13) A

(43) Date of A Publication 18.06.2003

(21) Application No 0128700.2

(22) Date of Filing 30.11.2001

(71) Applicant(s)
Jeremy Philip Hendy
Barnwood, 3 South Street, Comberton,
CAMBRIDGE, CB3 7DZ, United Kingdom

(72) Inventor(s)
Jeremy Philip Hendy

(74) Agent and/or Address for Service
Jeremy Philip Hendy
Barnwood, 3 South Street, Comberton,
CAMBRIDGE, CB3 7DZ, United Kingdom

(51) INT CL[7]
G06K 7/10

(52) UK CL (Edition V)
H4L LEAA L209 L213 L215
G4H HJ H14A
G4M MAA MB4

(56) Documents Cited

GB 2367975 A	GB 2354360 A
EP 1156646 A1	WO 2002/082799 A2
WO 2002/019688 A2	US 2002102966 A1

(58) Field of Search
UK CL (Edition V) G4H, G4M, H4L
INT CL[7] G06K
Other: ONLINE: WPI, EPODOC, JAPIO, INSPEC

(54) Abstract Title
Combined barcode scanner, video camera and mobile telephone

(57) A portable communications terminal uses a single image sensor to scan barcodes and perform other image processing functions such as digital still or video photography or videotelephony. Information captured from a barcode may be transmitted from the mobile terminal via a communications link to an external network for applications such as retail price comparison. The terminal may be implemented as a single integrated unit such as a mobile videophone, or as multiple devices linked by a local wired or wireless communications link such as Bluetooth.

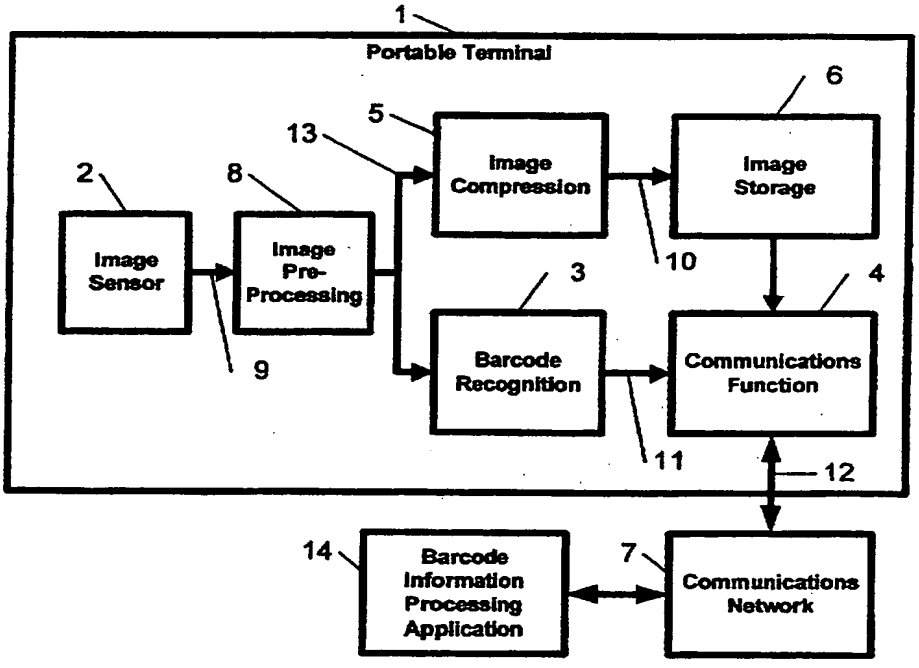

Figure 1

GB 2 383 231 A

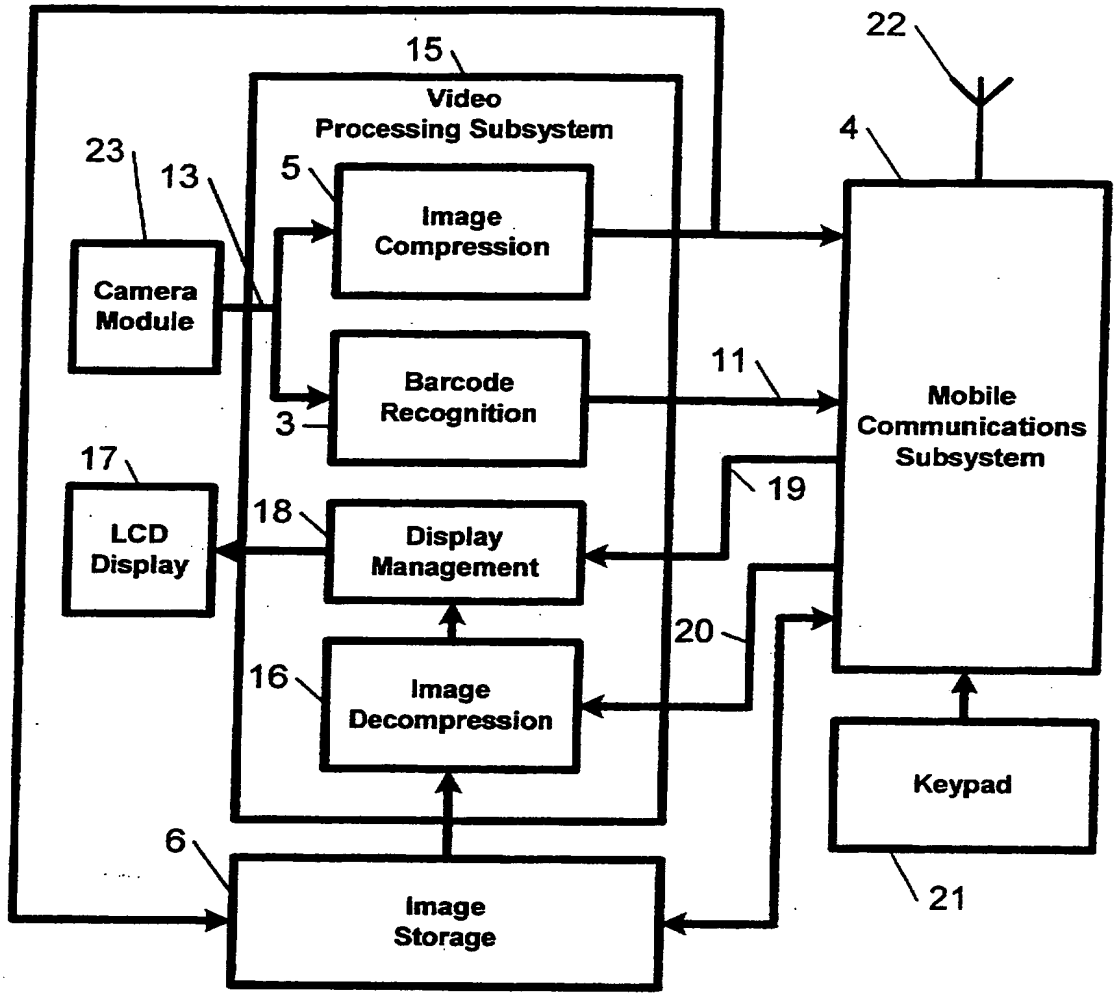
15
Video
Processing Subsystem
22
4
23
13
5
Image
Compression
Camera
Module
Barcode
Recognition
11
Mobile
Communications
Subsystem
3
17
19
LCD
Display
18
Display
Management
20
16
Image
Decompression
Keypad
6
Image
Storage
21

Figure 2

compressed by the image preprocessor block 8, to generate video signal 13. This video signal 13 is then passed to a barcode recognition function 3 and an image compression function 5, thereby allowing functions 3 and 5 to use a common image sensor 2.

Function 3 analyses the image from the sensor 2 to determine if a valid barcode is present in the image, extracts the barcode information, and outputs the information originally encoded in the barcode as a barcode information value 11.

The communications function 4 uses a wired or wireless communications link 12 to convey the barcode information value 11 to an external communications network 7, via which it is passed to a barcode information processing application 14. The application 14 may interact with the user of the portable terminal 1, for example by displaying information on a screen within the portable terminal 1.

The communications link 12 may for example use a second or third generation mobile telephony standard such as GSM, GPRS, CDMA or 3GPP, or a short range wireless standard such as Bluetooth or IEEE 802.11.

The video signal 13 is passed to the image compression function 5 and fixed or moving images are stored in the image storage unit 6, which may be implemented as local random access memory, or as removable storage. The user may also choose to transmit the images stored in unit 6 to the communications network via the communications function 12.

Figure 2 illustrates one potential implementation of the portable terminal 1 in a videophone terminal that uses the videophone camera to recognise UPC barcodes on retail packaging.

The terminal 1 consists of a video processing subsystem 15 and a mobile communications subsystem 4. The video processing subsystem 15 would typically be implemented on a dedicated video processing microcontroller although the subsystem 15 could also be implemented using software executing on the same microcontroller that is used for the mobile communications subsystem 4.

A camera module 23, which includes the image sensor 2 and preprocessing function 8, passes the video signal 13 to a video processing subsystem 15. When the user presses a key sequence on the mobile phone keypad 21, the barcode recognition function 3 in the video processing subsystem 15 is activated. When a valid barcode is recognised, the video processing subsystem 15 passes the UPC value 11 to the mobile communications subsystem 4. An application in the mobile communications subsystem processes the UPC value 11, and then sends it to the network-based barcode information processing application 14 via the mobile communications network 7 and the antenna 22. The application 14 may then provide information back

CLAIMS

1. A portable communications terminal that uses a common image sensor to decode barcode information and also to process images for other purposes. The information extracted from the barcode is transmitted from the terminal to an external network using a data communications link.

2. A terminal as claimed in any preceding Claim where the communications link is a digital radio link

3. A terminal as claimed in any preceding Claim where the communications link conforms to an internationally recognised technical standard for mobile telephony

4. A terminal as claimed in any preceding Claim where the communications link is a wireless link complying to the Bluetooth standard

5. A terminal as claimed in any preceding Claim where the communications link is a wireless link complying with the IEEE 802.11 standard

6. A terminal as claimed in any preceding Claim where the image processing functions include digital still camera functionality

7. A terminal as claimed in any preceding Claim where the image processing functions include digital video camera functionality

8. A terminal as claimed in any preceding Claim where the image processing functions include videophone functionality

9. A terminal as claimed in any preceding Claim where the barcode recognition function can recognise Universal Product Code symbols

10. A terminal as claimed in any preceding Claim where the barcode recognition function can recognise 2-dimensional barcodes

11. A terminal as claimed in any preceding Claim where all functions of the portable communication terminal are integrated into a single device

12. A terminal as claimed in any preceding Claim where one or more functions of the portable communication terminal are performed by several interconnected devices.

Application No: GB 0128700.2
Claims searched: 1-13

Examiner: Robert Shorthouse
Date of search: 11 April 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1-5, 9-13 at least	GB 2354360 A	(ROKE MANOR) See whole document.
X, E	1-3, 9-13 at least	WO 02/19688 A2	(LEV) See abstract and page 14 lines 14-29
X, E	1-3, 9-12 at least	WO 02/082799 A2	(LEV) See abstract and page 1 final paragraph
X	1	EP 1156646 A1	(SAGEM) See abstract and figures 1 and 4.
A. E	-	US 2002102966 A1	(LEV) See abstract
A	-	GB 2367975 A	(ACCENTURE) See abstract

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[V]:

H4L, G4H, G4M

Worldwide search of patent documents classified in the following areas of the IPC[7]:

G06K

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, JAPIO, INSPEC